

## REMARKS/ARGUMENTS

Claims 1-20 are pending in this application. The Examiner has allowed claims 1-5. Claims 6-19 are rejected and claim 20 is objected to by the Examiner.

The Examiner has objected the drawings as allegedly failing to comply with 37 CFR 1.84(p)(5) because they allegedly include the following reference character(s) not mentioned in the description: 219. Applicant has amended section [0022] of the specification to mention memory unit of access 219. Applicant submits the application, as originally filed, including the drawings, provides support for the amendment. For example, Applicant submits support may be found in Figure 2 and the remainder of section [0022]. Thus, Applicant submits no new matter has been added. Moreover, Applicant submits the Examiner's objection to the drawings has been obviated. Applicant submits the amendment is merely cosmetic in nature and does not affect the scope of the claims.

The Examiner has objected to the disclosure. The Examiner cites section [0002], lines 6-8; section [0006], lines 3-6; section [0024], lines 2-4; section [0025], lines 1-4; section [0028], lines 1-2; section [0032], lines 5-12; section [0037], lines 3-6; and "reference characters, which are not enclosed within parentheses." Applicant has amended the disclosure at section [0002], lines 6-8; section [0006], lines 3-6; section [0024], lines 2-4; section [0025], lines 1-4; section [0028], lines 1-2; section [0032], lines 5-12; and section [0037], lines 3-6. Applicant submits no new matter has been added. As for section [0032], lines 5-12, for which the Examiner does not propose an amendment "to retain the intended meaning," Applicant submits support for the amendment can be found within the application as originally filed, including the drawings. For example, Applicant submits support may be found in the remainder of section [0032], as well as in sections [0022] and [0023]. As the Examiner refers to the informalities using terms such as "grammatical error," appears to have understood the intended meanings, and, in most cases, offers proposed amendments to correct the informalities, Applicant submits the amendments are merely cosmetic in nature and do not affect the scope of the claims.

As for the "reference characters, which are not enclosed within parentheses", Applicant presumes the Examiner may have been alluding to MPEP § 608.01(m), which is subtitled "Form of Claims" and which states, in part, "Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. The reference characters, however, should be enclosed

within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. The use of reference characters is to be considered as having no effect on the scope of the claims." Applicant does not see reference characters used in the claims and, accordingly, submits the foregoing MPEP provision does not apply to the reference characters used in the present application. Therefore, Applicant submits the enclosure of reference numerals within parentheses is obviated.

The Examiner has objected to the order in which claims numbered 18 and 19 are presented and states they "should be switched in their order." Pursuant to the Examiner's instruction, Applicant has amended claim 18 to recite originally filed claim 19 and claim 19 to recited originally filed claim 18. As the wording of the claims is unchanged, Applicant submits such amendments are merely cosmetic in nature and do not affect the scope of the claims.

Regarding 35 U.S.C. § 112, the Examiner states claim 18 recites the limitation "the amount of desired data" with insufficient antecedent basis and states "the Examiner will assume "the amount of desired data" will be read "an amount of desired data."

The Examiner has rejected claims 6, 7, 10, 11, 14, and 18 under 35 U.S.C. § 102(b) as being anticipated by Ukai et al. ((U.S. Patent No. 5,809,516) hereinafter Ukai). Applicant respectfully disagrees.

Regarding claim 6, Applicant submits the cited reference fails to anticipate the subject matter recited in claim 6. For example, Applicant submits the cited portion of the cited reference fails to disclose "...a second portion of the plurality of storage devices is accessed at a second hardware memory address adjacent to the first hardware memory address." While the Examiner cites "column 29, lines 53-56," Applicant notes the context within which such lines appear. For example, Applicant notes column 29, lines 56-61, state, "As illustrated, the first write request to the logical unit #U0 is allocated the physical block (#L0) in the logical unit #U0; the first write request to the logical unit #U1 is allocated the physical block (#L7) in the logical unit #U1 because the physical block #L7 meets the condition of step 454." Accordingly, Applicant submits claim 6 is not anticipated, but is in condition for allowance.

Regarding claim 7, Applicant submits the cited reference fails to anticipate the subject matter recited in claim 7. For example, Applicant submits the cited portions of the cited reference fail to

disclose "...with respectively separate address buses." The Examiner cites "(Figures 1, 18, 24, and 32)." However, Applicant can find no mention of "separate address buses" in such Figures. Accordingly, Applicant submits claim 7 is not anticipated, but is in condition for allowance.

Regarding claim 10, Applicant submits the cited reference fails to anticipate the subject matter recited in claim 10. For example, Applicant submits the cited portion of the cited reference fails to disclose "...the second hardware memory address being adjacent to the first hardware memory address." While the Examiner cites "column 29, lines 53-56," Applicant notes the context within which such lines appear. For example, Applicant notes column 29, lines 56-61, state, "As illustrated, the first write request to the logical unit #U0 is allocated the physical block (#L0) in the logical unit #U0; the first write request to the logical unit #U1 is allocated the physical block (#L7) in the logical unit #U1 because the physical block #L7 meets the condition of step 454." Accordingly, Applicant submits claim 10 is not anticipated, but is in condition for allowance.

Regarding claim 11, Applicant submits the cited reference fails to anticipate the subject matter recited in claim 11. For example, Applicant submits the cited portions of the cited reference fail to disclose "...with respectively separate address buses." The Examiner cites "(Figures 1, 18, 24, and 32)." However, Applicant can find no mention of "separate address buses" in such Figures. Accordingly, Applicant submits claim 11 is not anticipated, but is in condition for allowance.

Regarding claim 14, Applicant submits the cited reference fails to anticipate the subject matter recited in claim 14. For example, Applicant submits the cited portions of the cited reference fail to disclose "...accessible via a plurality of modes of access to allow selection among a plurality of predefined memory access starting points...." The Examiner cites "(column 4, lines 19-22 and column 4, lines 48-49)." However, Applicant notes such portions merely refer to "...different write requests may be executed in parallel..." and "A plurality of read requests are executed in parallel...." As another example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the predefined memory access starting points occur at intervals of less than a total memory bandwidth." The Examiner cites "(Figure 37 and column 4, lines 48-53)." However, Applicant notes Figure 37 relates to "LOGICAL BLOCK NUMBERS IN EACH LOGICAL UNIT" and column 4, lines 48-53, refers to "A plurality of read requests are executed in parallel..." and "...a maximum number of read requests that may be executed is equal to the maximum number of disc drives configured."

Regarding claim 18, Applicant submits the cited reference fails to anticipate the subject matter recited in amended claim 19 (originally filed as claim 18). For example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the amount of desired data is stored contiguously within a system memory address space of the memory system." The Examiner cites "(Figure 38 and column 29, lines 53-56)." However, Applicant notes Figure 38 relates to "LOGICAL BLOCK ALLOCATION SEQUENCE IN EACH LOGICAL UNIT" and does not appear to teach "...wherein the amount of desired data is stored contiguously within a system memory address space of the memory system." Accordingly, Applicant submits amended claim 19 (originally filed as claim 18) is not anticipated, but is in condition for allowance.

The Examiner has rejected claims 8, 9, 12, 13, 17, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Ukai et al. ((U.S. Patent No. 5,809,516) hereinafter Ukai) as being applied to claims 6, 10, and 14 above, and further in view of Yokote et al. ((U.S. Patent No. 5,651,129) hereinafter Yokote). Applicant respectfully disagrees.

Applicant submits the cited references fails to render obvious the subject matter recited in claim 8. Regarding claim 8, the Examiner acknowledges Ukai fails to disclose the method of claim 6 wherein the plurality of storage devices are implemented within a larger storage device, the larger storage device comprising an input to select an addressing mode. While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of claim 8, Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...the larger storage device comprising an input to select an addressing mode." The Examiner cites "(Figure 2, element 24 and column 3, 24-32)." However, Applicant can find no mention of "...an input to select an addressing mode" in such cited portions. Moreover, the Examiner states, "At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However, given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so

motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 8 is not rendered obvious, but is in condition for allowance.

Regarding claim 9, the Examiner acknowledges Ukai fails to disclose the method of claim 8 wherein the addressing mode allows selection of different hardware memory addresses among the plurality of storage devices for a same memory access operation. While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of claim 9, Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the addressing mode allows selection of different hardware memory addresses among the plurality of storage devices for a same memory access operation." The Examiner cites "(column 3, lines 24-32 and column 3, 48-54)." However, Applicant can find no mention of "...for a same memory access operation" in such cited portions. Moreover, the Examiner states, "At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However, given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 9 is not rendered obvious, but is in condition for allowance.

Regarding claim 12, the Examiner acknowledges Ukai fails to disclose the system of claim 10 wherein the first storage device and the second storage devices are implemented within a larger storage device, the larger storage device comprising an input to select an addressing mode." While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of claim 12, Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...the larger storage device comprising an input to select an addressing mode." The Examiner cites "(Figure 2, element 24 and column 3, 24-32)." However, Applicant can find no mention of "...an input to select an addressing mode" in such cited portions. Moreover, the Examiner states, "At the

time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However, given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 12 is not rendered obvious, but is in condition for allowance.

Regarding claim 13, the Examiner acknowledges Ukai fails to disclose the system of claim 12 wherein the addressing mode allows selection of different hardware memory addresses among the first storage device and the second storage device for a same memory access operation. While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of claim 13, Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the addressing mode allows selection of different hardware memory addresses among the first storage device and the second storage device for a same memory access operation." The Examiner cites "(column 3, lines 24-32 and column 3, 48-54)." However, Applicant can find no mention of "...for a same memory access operation" in such cited portions. Moreover, the Examiner states, "At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However, given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 13 is not rendered obvious, but is in condition for allowance.

Regarding claim 17, the Examiner acknowledges Ukai fails to disclose the system of claim 14 wherein the predefined memory access starting points occur in the memory banks as a function of a

size of a desired data block to be accessed. While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of claim 17, Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the predefined memory access starting points occur in the memory banks as a function of a size of a desired data block to be accessed." The Examiner cites "(Figure 2)" and "(Column 2, lines 50-62)." However, Applicant can find no reference to "predefined memory access starting points" occurring as recited in claim 17 within the cited portion of the cited reference. Moreover, the Examiner states, "At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However, given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 17 is not rendered obvious, but is in condition for allowance.

Regarding claim 19, the Examiner acknowledges Ukai fails to disclose the memory system of claim 17 wherein the amount of desired data is an asynchronous transfer mode (ATM) cell. While the Examiner alleges the alleged teachings of Yokote can be combined with the alleged teachings of Ukai to yield the claimed subject matter of amended claim 18 (formerly originally filed claim 19), Applicant submits the claimed subject matter remains non-obvious. For example, Applicant submits the cited portions of the cited reference fail to disclose "...wherein the amount of desired data is an asynchronous transfer mode (ATM) cell." The Examiner cites "(Figure 1, element 14 and Column 2, lines 59-62)." However, Applicant can find no reference to "...wherein the amount of desired data is an asynchronous transfer mode (ATM) cell" occurring as recited in amended claim 18 (formerly originally filed claim 19) within the cited portion of the cited reference. Moreover, the Examiner states, "At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the disk drives of Ukai (Figure 1, element 4) with the controller/memory modules of Yokote (Figure 1, element 16). The motivation for doing so would have been to create a mass data storage device providing high-density, high-capacity storage (Yokote – column 1, lines 54-57)." However,

given the historical differences in properties of "disk drives" and "controller/memory modules" (e.g., capacities), replacing the disk drives of Ukai with the controller/memory modules of Yokote could be expected to lower the storage capacity. Thus, Applicant submits one of ordinary skill in the art would not have been so motivated to combine the alleged teachings of the cited references. Accordingly, Applicant submits claim 19 is not rendered obvious, but is in condition for allowance.

The Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Ukai et al. ((U.S. Patent No. 5,809,516) hereinafter Ukai) as applied to claim 14 above, and further in view of McClure (U.S. Patent No. 5,590,307). Applicant respectfully disagrees.

Regarding claim 15, the Examiner acknowledges Ukai fails to disclose the memory system of claim 14 wherein the plurality of memory banks are accessible via burst access. Applicant has presented reasons for the allowability of claim 14. Thus, Applicant submits claim 15 is also in condition for allowance.

The Examiner has rejected claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Ukai et al. ((U.S. Patent No. 5,809,516) hereinafter Ukai) as applied to claim 15 above, and further in view of Koutsoures (U.S. Patent No. 6,457,075). Applicant respectfully disagrees.

Regarding claim 16, the Examiner acknowledges Ukai and McClure fails to disclose the memory system of claim 15 wherein the total memory bandwidth is equal to the burst size. The Examiner alleges Koutsoures discloses the memory system of claim 15 wherein the total memory bandwidth is equal to the burst size, citing "(Column 2, lines 44-46)." While the cited portion of the cited reference refers to "cache line length," Applicant can find no teaching in the cited portion of the cited reference of the "cache line length" being "the total memory bandwidth." Thus, Applicant submits the cited portion of the cited reference, either alone or in combination with alleged teachings of the other cited reference, fails to render obvious the subject matter recited in claim 16.

The Examiner has allowed claims 1-5. The Examiner has objected to claim 20 as being dependent upon a rejected base claim, but states it would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In conclusion, Applicant has overcome all of the Office's rejections, and early notice of allowance to this effect is earnestly solicited. If, for any reason, the Office is unable to allow the



Application on the next Office Action, and believes a telephone interview would be helpful, the Examiner is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

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Date



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